

REMARKS / DISCUSSION OF ISSUES

The present amendment is submitted in response to the Office Action mailed July 21, 2009. In view of the amendments above and the remarks to follow, reconsideration and allowance of this application are respectfully requested.

Status of Claims

Claims 1, 4-6, 8-13 and 15 are pending in the application. Claims 1, 4-6, 12-15 and 20 were amended. Claims 2-3, 7, 14 and 16 were cancelled without prejudice or rejoinder.

The Invention

Prior to addressing the substantive issues, it is instructive to briefly review the invention.

Applicant's invention is directed to an integrated circuit and a method for exchanging messages in an integrated circuit. The integrated circuit comprises a plurality of modules M, S and a network N arranged for transferring messages between said modules M, S. A message issued from a message sending module M comprises first and second information, wherein the first information is indicative of the location of an intended message receiving module S within the network and wherein the second information is indicative of a location within the intended message receiving module S. The first information comprises (1) a connection identifier identifying two or more message receiving modules S (2) a port identifier of the passive network interface means associated with the intended message receiving module S. The design of the message sending modules M is such that they are implemented independently of the address mapping to the message receiving modules S. In this manner, a more efficient network resource utilization is achieved and the scheme is backwards compatible with conventional bus structures.

35 U.S.C. §112, second paragraph

Claims 1-16 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2-3, 7, 14 and 16 have been cancelled without prejudice or disclaimer. Claims 1, 4-6 and 8-15 have been amended in a manner which is believed to overcome the rejections.

I. Rejections under 35 U.S.C. §103(a)

In the Office Action, Claims 1-4, 6-8, 10 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over EP 1,083,768 (“Feyerabend”) in view of Applicant’s Admitted Prior Art (AAPA). Applicant respectfully traverse the rejections.

Claims 1 and 4 are allowable

Claim 1 has been amended to clarify Applicant’s invention. Claim 1 now recites features which are neither shown nor suggested in the cited references. Accordingly, it is respectfully submitted that the cited portions of Feyerabend and AAPA, individually or in combination, fail to disclose or suggest the specific combination of claim 1. For example, the cited portions of Feyerabend and AAPA fail to disclose or suggest at least,

“ An integrated circuit comprising:

(a) a plurality of modules comprising a plurality of message sending modules M and a plurality of message receiving modules S;

(b) a network configured to exchange messages between said plurality of message sending modules M and said plurality of message receiving modules S based on request-response transactions;

(c) active network interface means associated with each of said plurality of message sending modules M;

(d) passive network interface means associated with each of said plurality of message receiving modules S,

wherein said active network interface means is configured to perform

communication management functions by receiving message requests issued by said plurality of message sending modules M including first information and second information,

wherein said active network interface means includes address translation means adapted to determine from said received message requests which of said message receiving modules S is being addressed in said message requests issued from said plurality of message sending modules M based on said first information and further determine the particular location within the addressed message receiving module S based on said second information

wherein said first information is indicative of the location of said message receiving module S within the network being addressed by one of said plurality of message sending modules M in said message request and is comprised of (1) a connection identifier identifying two or more message receiving modules S and (2) a port identifier of the passive network interface means”.

It is respectfully submitted that neither cited reference teaches a plurality of modules comprising message sending and receiving modules situated in a network based on request-response transactions, whereby the message sending modules have associated active network interface means configured to perform communication management functions by receiving message requests issued from respective associated message sending modules. The active network interface means including address translation means adapted to determine from the received message requests which message receiving module(s) is being addressed in the message request. The determination being based on first information and second information provided in the message request issued from the message sending module. Wherein the first information is indicative of the location of a message receiving module S within the network being addressed by the message sending module M in said message request. The first information being comprised of (1) a connection identifier identifying two or more message receiving modules S (2) a port identifier of the passive network interface means.

The Office cites Feyerabend for allegedly disclosing a system and method whereby a subscriber identity can be determined according to a first and second portion of an IP address.

The Office directs Applicant's attention to Feyerabend in the Abstract and at col. 8, lines 32-34 and col. 13, lines 9-18 and Fig. 6. Applicant respectfully disagrees. Upon a close reading of the cited portions of Feyerabend, it should be understood that Feyerabend discloses that a determination is made of a subscriber identity SI from an IP address. For the example of a Global IP address, the first portion (i.e., the first octet) of the IP address is used to retrieve by a look-up table, a network identifier and the second portion (i.e., the remaining 3 octets) specify a particular host in the network. See Feyerabend, col. 13, lines 1-60. Applicant submit that the **first portion** of the IP address specifying a network identifier of a host is different from specifying **first information** comprised of (1) a connection identifier identifying two or more message receiving modules S (2) a port identifier of the passive network interface means, as recited in claim 1. In Feyerabend, the network is not known a-priori and therefore at least a portion of the IP address must be used to discover it. According to the invention, the network is known and what must be determined is the message receiving module S. To do so, the message sending module M sends a connection ID identifying several message receiving modules S and means for selecting one of the several message receiving modules by specifying the port identifier of the passive network interface means of the target message receiving module. This distinction is apparent due to the fact that Feyerabend does not teach the exchange of messages in an integrated circuit, as recited in claim 1. The Office cites AAPA for disclosing an integrated circuit comprising a plurality of modules and a network arranged for transferring messages between the modules, wherein a message issued by a first module M comprises first information indicative of a location of one of the modules S being addressed within the network, and second information indicative of a particular location within the addressed module S, such as a memory or a register address. Applicant respectfully disagrees with the Office's conclusion that it would have been obvious to use the address translator of Feyerabend in the on-chip network disclosed by the AAPA because the address translator of Feyerabend utilizes at least a different approach for utilizing first information for determining a location of one of the modules S being addressed within the network than what is taught in AAPA, as recited in claim 1 as amended.

Further, Applicant respectfully submit that AAPA does not teach a key feature of the invention which is the design of the message sending modules M. That is, according to the

invention, the message sending modules are implemented independently of the address mapping to the message receiving modules S. In this manner, a more efficient network resource utilization is achieved and the scheme is backwards compatible with conventional bus structures, as discussed above. Address mapping is advantageously performed by the network interface means and in particular the address translation unit of the network interface means, as recited in claim 1 as amended.

Hence, claim 1 is allowable. Claim 4 depends from independent Claim 1, which Applicant have shown to be allowable. Accordingly, claim 4 is also allowable, at least by virtue of its dependency from claim 1.

Claims 6, 8 and 10-12 are allowable

Independent Claim 6 recites similar subject matter as Independent Claim 1 and therefore contains the limitations of Claim 1. Hence, for at least the same reasons given for Claims 1, Claim 6 is believed to recite statutory subject matter under 35 USC 103(a). Claims 8 and 10-12 depend from independent Claim 6, which Applicant have shown to be allowable. Accordingly, claims 8 and 10-12 are also allowable, at least by virtue of their dependency from claim 6.

Claim 5 is allowable

In the Office Action, Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Feyerabend in view of AAPA as applied to claim 4, and further in view of U.S. Patent No. 6,446,173 ("Pham"). Applicant respectfully traverse the rejection.

As explained above, the cited portions of Feyerabend and AAPA individually or in combination, do not disclose or suggest each and every element of claim 1 from which claim 5 depends. Pham does not disclose each of the elements of claim 1 that are not disclosed by Feyerabend and AAPA. For example, Pham does not disclose or suggest

“ An integrated circuit comprising:

(a) a plurality of modules comprising a plurality of message sending modules M and a plurality of message receiving modules S;

(b) a network configured to exchange messages between said plurality of message sending modules M and said plurality of message receiving modules S based on request-response transactions;

(c) active network interface means associated with each of said plurality of message sending modules M;

(d) passive network interface means associated with each of said plurality of message receiving modules S,

wherein said active network interface means is configured to perform communication management functions by receiving message requests issued by said plurality of message sending modules M including first information and second information,

wherein said active network interface means includes address translation means adapted to determine from said received message requests which of said message receiving modules S is being addressed in said message requests issued from said plurality of message sending modules M based on said first information and further determine the particular location within the addressed message receiving module S based on said second information

wherein said first information is indicative of the location of said message receiving module S within the network being addressed by one of said plurality of message sending modules M in said message request and is comprised of (1) a connection identifier identifying two or more message receiving modules S and (2) a port identifier of the passive network interface means”.

Pham is cited by the Office for allegedly disclosing an address mapping table containing specific fields for every channel of a connection for network interface ports of a connection. Pham teaches at col. 5, lines 15-24, a memory device including look-up tables 204 including entries which indicate which port of a multi-port bridge is associated with each node of the LAN. Claim 5 as amended recites, “*An Integrated circuit according to claim 4,*

wherein said address mapping table contains fields for every channel of a connection between said message sending module M and at least one addressed message receiving module S, for network interface ports of a connection, and for local addresses in said at least one addressed message receiving module.” It is respectfully submitted that the look-up table of Pham does not disclose an address mapping table between a message sending module and a message receiving module. Rather, the look-up table of Pham discloses a table associating nodes of a LAN and their respective ports on a multi-port bridge. It is respectfully submitted that associating nodes of a LAN with their respective ports on a multi-port bridge is akin to associating the messaging modules of the invention with their respective network interfaces. Further, Pham at col. 9, lines 11-20 discloses an association between signal lines and their respective ports. Neither cited reference discloses the elements of claim 5 as amended for clarity and precision, which now recites that the *address mapping table contains fields for every channel of a connection between said message sending module M and at least one addressed message receiving module S.*

Thus, the cited portions of Feyerabend, AAPA, and Pham, individually or in combination, do not disclose or suggest does not disclose or suggest each and every element of claim 1 as amended. Hence claim 1 is allowable and claim 5 is allowable, at least by virtue of its respective dependence from claim 1.

Claim 9, 11 and 16 are allowable

In the Office Action, Claims 9, 11 and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Feyerabend in view of AAPA as applied to claims 2 and 8, and further in view of Sgroi et al. (“Addressing the System-on-a-Chip Interconnect Woes Through Communication-Based Design”). Claim 16 has been cancelled without prejudice or disclaimer. Applicant respectfully traverse the remainder of the rejections.

As explained above, the cited portions of Feyerabend and AAPA individually or in combination, do not disclose or suggest each and every element of claim 6 from which claims 9 and 11 depend. Sgroi does not disclose each of the elements of claim 6 that are not

disclosed by Feyrerabend and AAPA. For example, Sgroi does not disclose or suggest

“ An integrated circuit comprising:

(a) a plurality of modules comprising a plurality of message sending modules M and a plurality of message receiving modules S;

(b) a network configured to exchange messages between said plurality of message sending modules M and said plurality of message receiving modules S based on request-response transactions;

(c) active network interface means associated with each of said plurality of message sending modules M;

(d) passive network interface means associated with each of said plurality of message receiving modules S,

wherein said active network interface means is configured to perform communication management functions by receiving message requests issued by said plurality of message sending modules M including first information and second information,

wherein said active network interface means includes address translation means adapted to determine from said received message requests which of said message receiving modules S is being addressed in said message requests issued from said plurality of message sending modules M based on said first information and further determine the particular location within the addressed message receiving module S based on said second information

wherein said first information is indicative of the location of said message receiving module S within the network being addressed by one of said plurality of message sending modules M in said message request and is comprised of (1) a connection identifier identifying two or more message receiving modules S and (2) a port identifier of the passive network interface means”.

Sgroi is cited by the Office for disclosing a connection comprising a set of channels where each channel has a set of connection properties and that the connection properties

comprise ordering, flow control, throughput, latency, lossiness, transmission termination, transaction completion, data correctness, priority and data delivery.

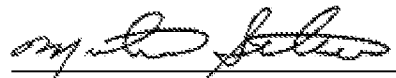
Thus, the cited portions of Feyerabend, AAPA, and Sgroi, individually or in combination, do not disclose or suggest does not disclose or suggest each and every element of claim 6 as amended. Hence claim 6 is allowable and claims 9 and 11 are allowable, at least by virtue of their respective dependencies from claim 6.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1, 4-6, 8-13 and 15 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Mike Belk, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-945-6000.

Respectfully submitted,



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